DLI6330
Matrix/DVR/PTZ Dome/Rec./Driver
Keyboard/Controller

Installation and Operations Manual

Model Number: DLI6330

Description: Matrix/DVR/PTZ Receiver/Driver Keyboard/Controller

1. Summary----------1
1.1 Notice----------1
1.2 Function and Characteristic----------1
1.3 Technical Data---------- 1
2. Keyboard Connection----------2
2.1.1 RS-422 and RS-485 Interfaces----------2
2.1.2 Power Supply Port----------2
2.1.3 RS-232 EIA Interface----------2
2.1.4 RJ-45 Interface----------2
2.2 DIP Switches Setting----------3
2.3 Matrix Connection----------3
2.3.1 RJ45 Local Connection----------3
2.4 The Connection with the Dome Directly----------4
2.5 The Connection of the Keyboard in the System----------4
3. Keyboard operation manual----------6
3.1 Applying power to keyboard----------6
3.2 LCD----------6
3.3 Joystick controls dome ----------6
3.4 Change object dome----------7
3.5 Dome lens control ----------7
3.6 Set dome function----------7
3.6.1 Preset----------7
3.6.2 Scan----------7
3.6.3 Pattern----------7
3.6.4 Tour----------8
3.7 Call dome main menu----------8
3.8 Control matrix----------8
4. Appendix----------9
4.1 Rs485 Bus Basic Knowledge----------9
4.2 Keyboard shortcut operation manual----------9
4.3 The Dome ID Setting----------9
4.4 The keyboard baud rate setting----------10
5. The alarm box control----------10
5.1 The alarm box control----------10
5.2 The protocol setting ----------11
6. Appendix----------12
6.1 RS-485 Bus line knowledge----------12
6.2 Keyboard shortcut operation manual----------13

1. Summary

The keyboard is an universal keyboard of security monitoring series, which can control the ball type integrated camera of all kinds protocols matrix and DVR, which has been equipped with the 3Dl joystick which can control the revolving of the camera and the zoom magnification of lens; with the LCD screen and the function of back-light; which can display the current operation order the control protocol name the current dome ID the current monitor ID and the state of joysticks. The user can control the CCTV system more easily with the joystick and the LCD screen.

1.1 Notice

- Please read the manual carefully and retain information.
- Please follow manual instructions.
- Do not install keyboard in the wet area.
- Do not keep keyboard near heat generating equipment for long periods.

1.2 Function and Characteristic

- Keyboard may connect to maximum 31 PTZ domes in the direct control mode via RS-485.
- It is compatible with multiple of protocols.
- User may control the Iris, Focus and Zoom.
- User may set and call the preset, run the scanning, pattern and the tour.
- User may control the matrix which controls the PTZ dome.
- It may be set alarm trigger and alarm linkage.
- It has been equipped with the 3D joystick and LCD screen.

1.3 Technical Data

Electrical Parameters

Input voltage 9V-12V AC/DC

Rated power 2.5W

Communication's Parameters

Communication interface RS-485, RS-422, RS-232, RJ-45

Communication frequency 2400Bps, 4800Bps, 9600Bps

Communication distance 1.2KM (RS-485 and RS-422)

Environmental Parameters

Operating temperature 0°C ~ 40°C

Operating humidity 0 ~ 95% non condensing

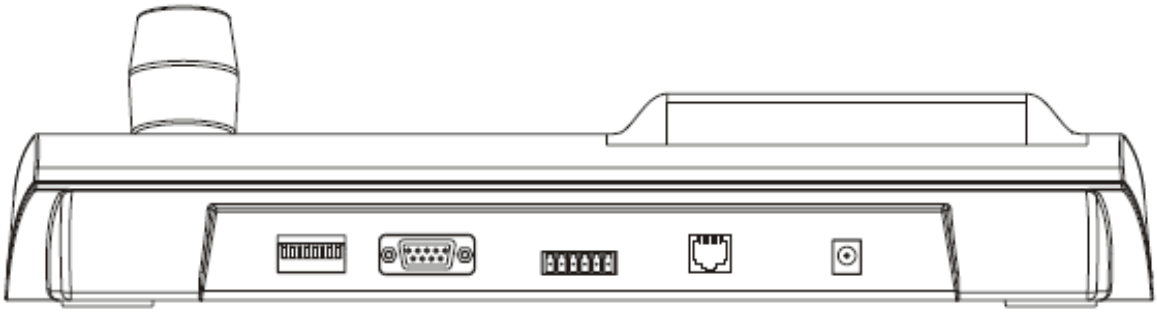
Physical Dimensions

L*W*H = 14.75”(375mm), 6.5”(165mm), 3.75”(95mm)

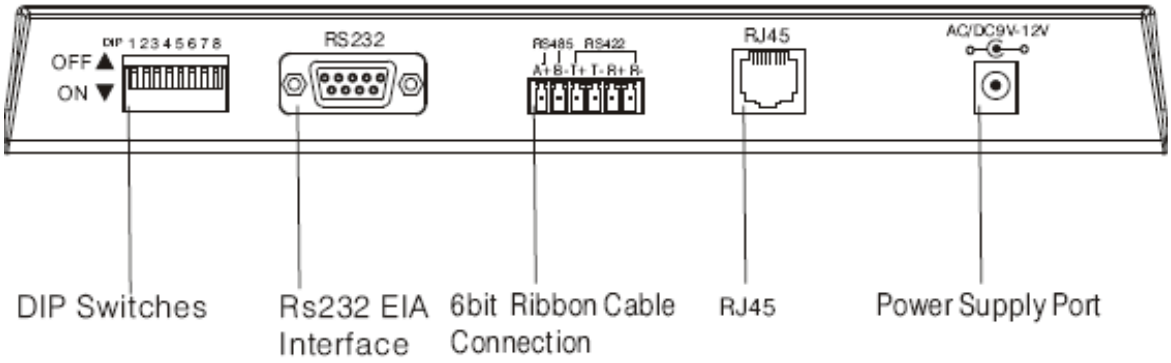
2. Keyboard Connection

2.1 Keyboard Interface Instructions

There are Data connectors on the back of the keyboard, which are designed to communicate with following interfaces: RS-232, RS-422, RS-485 and RJ-45 to connect with and control peripheral equipment.



Picture 2-1.1



Picture 2-1.2

2.1.1 RS-422 and RS-485 interfaces

RS-422 and RS-485 interfaces are on the ribbon cable connection of the keyboard.RS-485 (A+ B-) may connect with the PTZ dome when the keyboard controls the dome directly; RS-485 may connect with DVR or other keyboards when the keyboard controls the PTZ dome via Matrix Switcher; RS-422 is the another interface which connects with Matrix Switcher and DVR.

2.1.2 Power supply port

The keyboard is equipped with a 120VAC or 230VAC to 9V-12VDC/AC power adapter

2.1.3 RS-232 EIA Interface

It can be used to expand the control functions of DVR or PC.

2.1.4 RJ-45 Interface

It is network interface for connecting with the matrix for short distance (<7.6m). See 2.3 "connecting with matrix".

2.2 **DIP Switch Setting**

8 Bit is the end resistance 120 Ohm setting of RS-485 Bus. It means the end resistance has connected into the RS-485 line when the setting is ON - see 4.1 RS-485 Bus Information.

2.3 Matrix Connection

The keyboard can control matrix of DANTE SECURITY DLH4200B and DLH4400E Matrix Switcher – see connection below - keyboard connects with the DANTE SECURITY DLH4200B matrix. There are two kinds of keyboard connection interface on the DLH4200B matrix back plate: one is keyboard connection interface RJ-45 ("LOCAL KEYBOARD"), which can control the Matrix with the distance of 7.6m; the other is the remote interface RS-422 (REMOTE KEYBOARD(s)) which can connect with the Matrix via RS-422 interface with the maximum distance of 1200m.

2.3.1 RJ45 Local Connection

Please insert one end of RJ-45 cable into the RJ-45 port of the keyboard and insert another one into the RJ-45 interface Local KEYBOARD port of DLH4200B matrix.

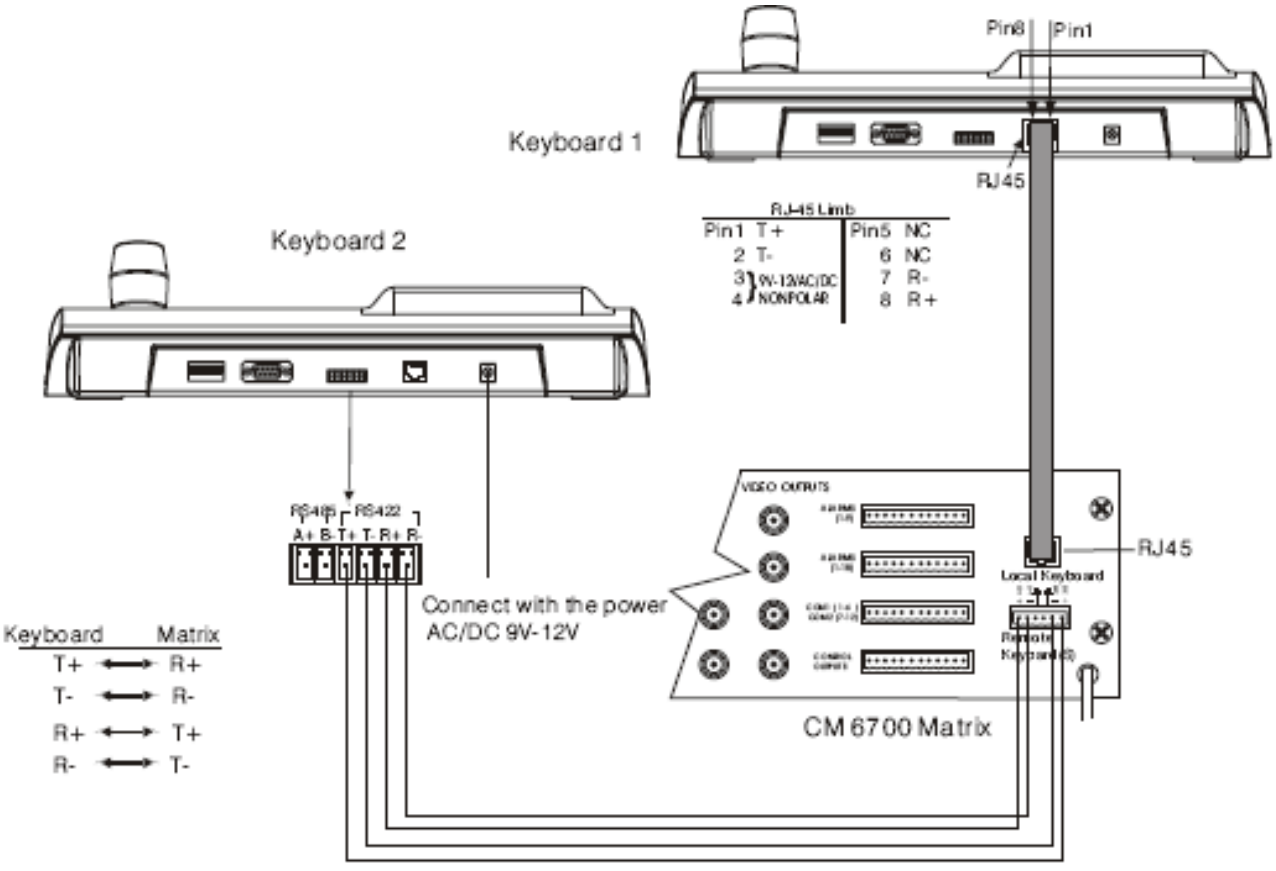
Notice:

1. RJ-45 native connection – distance between keyboard and matrix switcher is less than 7.6m
2. RJ45 interface provides 12VAC and connected with the DLH4200B Matrix does not require outside power source

2.3.2 RS-422 remote connection

RS-422 connection line – connect one end of RS-422 interface (REMOTE KEYBOARD(s)) of DLH4200B back plate, the other end connects with RS-422 interface of the keyboard, the keyboard interface RS-422(R+ R-) corresponds with matrix interface RS422 (T+ T-).

Notice:RS422 remote connection, the maximum distance between the keyboard and the matrix is 1200m.

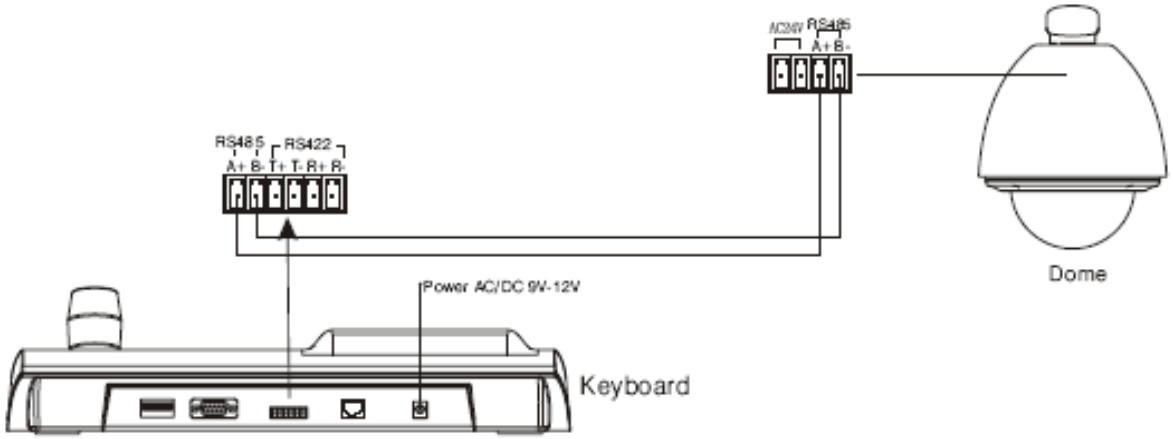


Connection

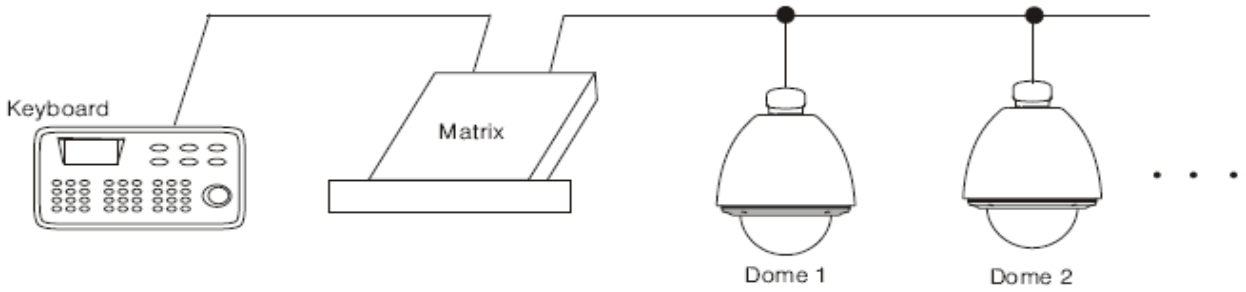
2.4 Direct Control and Connection to PTZ Dome

User may connect with the dome via RS-485 interface when the keyboard controls the dome directly.

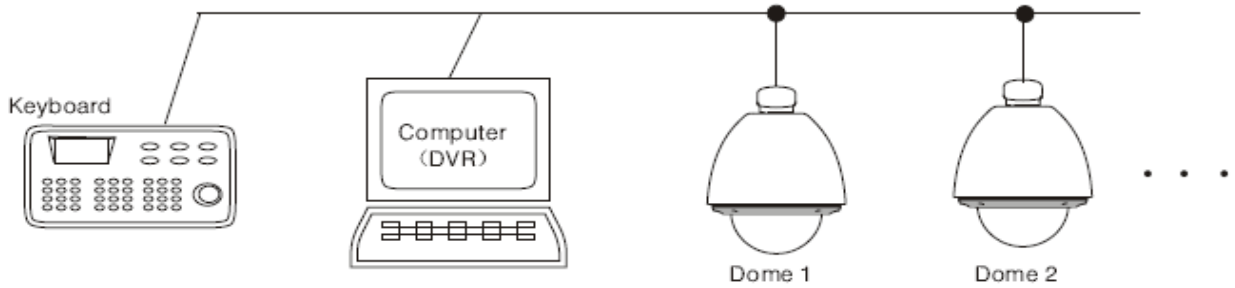
The RS-485 interface of the dome is on the PCB assembly inside the upper Dome cover. Please find the 4 Pin control/power socket and find the corresponding RS-485 (A+, B-) interface according to the diagram when you remove small cover plate and open the switchboard. Additional information is available in PTZ Dome installation manual.



2.5 Keyboard Connection in System

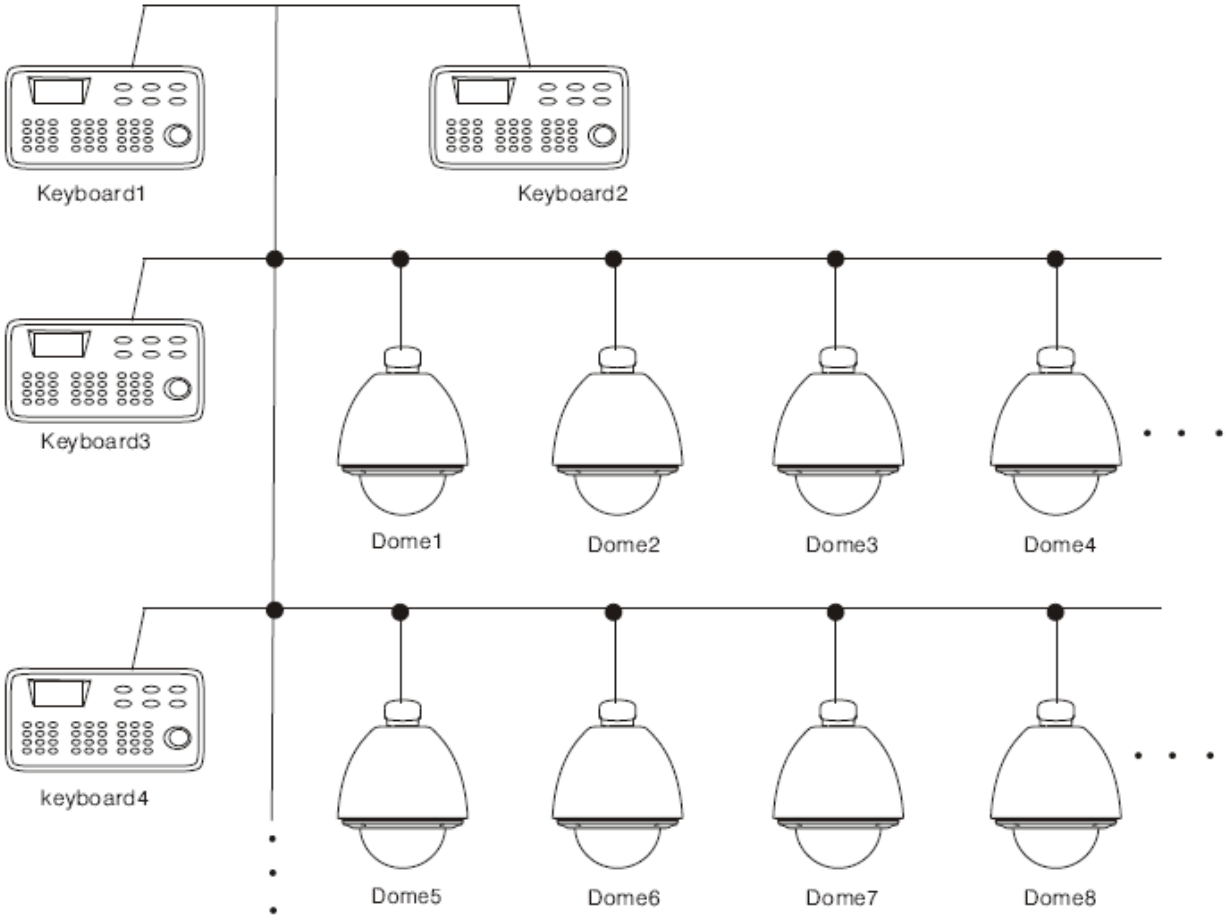


Picture 2-5.1



Picture 2-5.2

Connection



Picture2-5.3

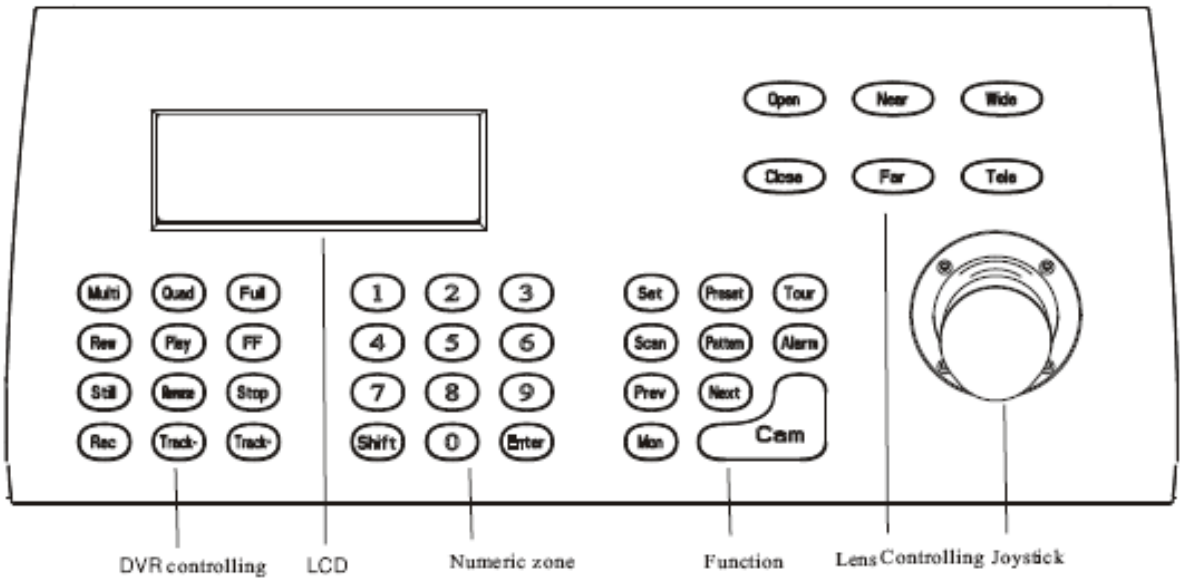
Keyboard may control an alarm input and connects to the PTZ dome via the alarm input. The details please see to the alarm interface user manual. Every alarm input may connect to one camera.

The keyboard controls the matrix which controls the PTZ domes via direct Data Ports or Control Code Generator/Distributors (see figure 2-5.1). Keyboard may control the PTZ dome directly. Keyboard may control PC based DVR and PTZ domes etc. (see figure 2-5.2). Keyboard may control each PTZ dome in parallel via RS-485 Bus topology and each keyboard may control each PTZ dome. It is necessary to have a main keyboard (the main keyboard ID is set as 1, and the switcher 1-4 bits are set as OFF), the Baud rate of keyboard is set as 9600bps (the switcher 5-6bits are set as ON, Bit 7 is set as OFF) - see (figure 2-5.3).

As the previous diagram shows, keyboard and keyboard connection or keyboard and computer connection set as RS-232, when their distance is under 20m, or if greater it must be set via RS-485.

Notice: A line of RS-485 may included up to 32 devices under control equipment, therefore a keyboard which controls the PTZ domes directly may connect up to 31 domes.
2. The system may be configured to connect up to 4 keyboards at the same time, and the four keyboards must be set with different ID.

3. Keyboard Operation Manual



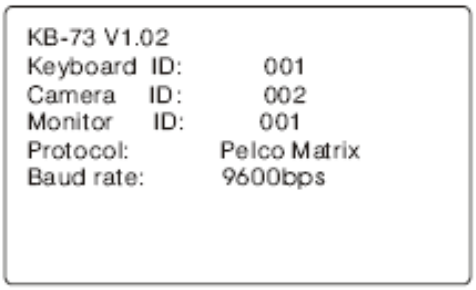
Picture3-1.1

This chapter describes the method of operating keyboard and provides the different system platform of operations. Each system platform may have some particular requirements of operation so careful attention must be given to the complementing instruction manuals of PTZ Domes and Matrix Switchers.

3.1 **Powering keyboard**

When power is applied to keyboard, it will auto-test the version number, keyboard ID, Baud rate and protocol. PTZ dome and monitor will be auto-set as 1 and the information will be display on the LCD.

Notice: 1.Before current-carrying to keyboard, pay attention to setting the switcher of keyboard, if set the switcher after current-carrting, the switcher is invalid.
2.when the keyboard is initializing, should be make the joystick to return to 0, not to pull or tilt the joystick.



Picture3-1.2

3.2 **LCD**

Keyboard LCD is used to display the basic information of keyboard operation, including keyboard Model, ID, controlling camera, monitor ID, baud rate, etc. The last row includes Keyboard input commands and joystick operation. As the right picture shows when operating it, LCD will turn on back light, in order to operate easily; if operation is suspended for 15 sec, back light will automatically turn off.

3.3 **Joystick controls the dome**

Joystick has two functions, one is manually control PTZ dome rotation and the other is setting menu for controlled device.

- Move joystick in any direction, the PTZ dome will rotate in corresponding directions at the same time; LCD displays the information as lower right corner shows " "they respectively reflect tilt up, tilt down, tilt right, tilt left. If the joystick tilts upper right corner, the screen will display such information " ". The joystick returns to the primary location and the dome immediately stops its movement.
- Moving the joystick up means choosing previous menu. Moving it down means choosing next menu if it is used to set the menu. Move joystick to right means entering the next menu or saving settings. Moving it left means exit or discontinue saving settings.
- The more heavy is the gradient of joystick, the faster the dome rotates. By controlling the gradient of joystick, one controls the rotation speed of dome.
- Rotating the joystick cap adjusts the focus of lens. Rotating clockwise, the camera lens is in Tele mode; at the same time there is " "icon displayed in the LCD. Rotating cap counter-clockwise, the lens is wide mode; at the same time there is " "displayed in the LCD.

3.4 Change object dome

[N**]** + **[**Cam**]**

[N**]** Reflects numeric key input for dome ID - Press **[**Cam**]** to change object dome.

3.5 Dome lens control

Zoom control:

Press **[**TELE**]**, lens zooms in tele mode (zooms in); release to stop.

Press **[**WIDE**]**, lens zoom in wide mode (zooms out); release to stop.

User may control the zoom by rotating joystick.

Focus control:

Press **[**FAR**]** manually far focus, to make the distant objects appear clearer; release to stop.

Press **[**NEAR**]** manually near focus, to make the close objects appear clearer; release to stop.

In usual situation, the camera is in the status of auto focus, user may operate manual focus to run other operations Using the two keys and the camera will automatically resume to auto-focus.

Iris control:

Press **[**OPEN**]** manual Iris open; release to stop.

Press **[**CLOSE**]** manual Iris close; release to stop.

3.6 Dome function operation

3.6.1 **Preset**

- Set preset: **[**SET**]** + **[**N**]** + **[**Preset**]**

Call preset: **[**N**]** + **[**Preset**]**

[N**]** Reflects preset number

3.6.2 **Scan**

- Set left limit: [SET] + [1] + [Scan]
- Set right limit: [SET] + [2] + [Scan]
- Run Scan: [1] + [Scan]

In order to change the speed of scan, enter into menu setup.

Connection

3.6.3 Pattern

● Set pattern path **[**SET**]** + **[**N**]** + **[**PATTERN**]** +Path+ SET + **[**0**]** + **[**PATTERN**]**

Press **[**SET**]**, input pattern NO. **(**1-4**)**, press **[**PATTERN] to enter tour setup the dome records a series of motions.

To end, press **[**SET**]**, then press **[**0**]**, then press **[**PATTERN**]**, the pattern setup is completed.

● Run pattern: **[**N**]** + **[**PATTERN**]**

Input pattern number 1-4 press **[**PATTERN**]** run pattern.

3.6.4 Tour

Run tour **[**N**]** + **[**TOUR**]** / **[**TOUR**]**

Press tour number press **[**TOUR**]** run tour. If system has only a tour, press **[**TOUR**]** directly.

In order to set tour must enter menu setup.

3.7 Call the dome main menu

[9**]** + **[**5**]** + **[**Preset**]**: input 95, the press **[**Preset] to call the main menu of object dome and the menu is displayed in the object monitor. To set the dome menu by keyboard, please refer to the dome Operation manual.

3.8 Control the matrix

3.8.1 Switch the domes in order

The matrix connects sixteen domes via code distributor and switches dome from Previous (one ID) to next dome.

[PREV]: switch to previous dome. Press **[**PREV**]**, switch to previous dome in single step

Press [PREV**]** and hold it for 2sec. to jump sixteen domes of the connecting matrix in previous set of domes.

Press **[**Stop**]** to stop switch.

[NEXT**]** switch to next dome; press **[**NEXT**]** to switch the next dome in single step; press

[NEXT**]** and hold it for 2sec. and jump the sixteen domes of the connecting matrix.

[Stop**]** switch continuously, press **[**Stop**]** to stop switching.

3.8.2 Call main menu of matrix

[Shift**]** + **[**Set**]**: call the main menu, and the menu will be displayed in the object monitor. In order to set the matrix menu by keyboard, please refer to the matrix operation manual.

3.8.3 Confirm after program

[ENTER**]**: after the matrix is programmed, press **[**ENTER**]**, reflects confirmation after program, as for the detailed program, please refer to the matrix operation manual.

3.8.4 Change monitor

[N**]** + [MON**]**

Input the monitor ID then press **[**MON**]**. **T**he image and the menu of the dome that is controlled by keyboard will be displayed in the chosen monitor.

As the keyboard is working in Pelco matrix mode(refer to 2.2 DIP switches setting), may carry out the command of controlling matrix.

4.1 The Keyboard Control Menu

Press **[**SET**]** keep for 2sec. the LCD displays following screen bellow.

Press numerical key or move the joystick up and down after entering the main menu, which enters the menu setting.

1 Keyboard setup
2 Alarm box setup
3 Protocol select
4 About keyboard
5 Exit menu

Function Setting

Choose relevant numerical keys according to the menu, then can enter relevant function setting. Press **[**ENTER**]** and save; LCD will display word "success" after saving the setting.

Returning previous menu

Press **[**PREV**]** or move the joystick to left, then return the previous menu.

4.2 Keyboard ID Setting

1. Enter Menu, LCD displays

1 Keyboard setup
2 Alarm box setup
3 Protocol select
4 About keyboard
5 Exit menu

2. Press **[1]** then choose keyboard setting

1 Set keyboard ID
2 Set baud rate
3 Joy stick calibrate
Press Prev. to return

3. Press **[1]** then choose keyboard ID setting

Input keyboard ID:

Press the relative numerical key (1-64); press **[**ENTER**]** to confirm. The keyboard displays the screen below upon successful operation.

Success

The screen will show **[**ERROR**]** if entering the numerical key which exceeds the ID capability (1-64)

Error

4. Press **[**PREV**]** or move the joystick to left then go back gradually.

Notice: The factory default ID of the keyboard is "1". The ID Number must be 1 if a single keyboard is installed. System may deploy up to 4 keyboards together when they are working inline, but there must be ID 1 for one keyboard, otherwise other keyboards will not operate properly.

4.3 The keyboard baud rate setting

Enter menu (LCD display

Press **[**1**]** to set the keyboard LCD display

Press **[**2**]** to set the keyboard baud rate.

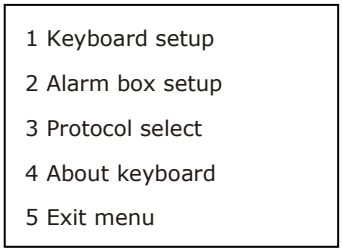
2400 bps
4800 bps
9600 bps
19200 bps

Press the relevant numerical keys; or move the keyboard up and down to choose the baud rate, then press **[**ENTER**]**. The screen display It means the operation is success. Then press **[**PREV**]** or move the joystick left to return.

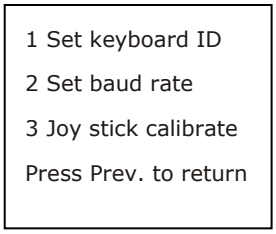
Notice: when Keyboard controls Matrix Switcher 9600 BPS or 19,200 BPS must be chosen

4.4 Joystick Setup

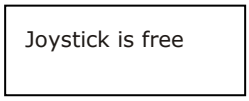
Enter the main menu; LCD displays:



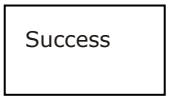
Press [1] to choose the keyboard setting LCD setting



Press [3] to enter Joystick setup,



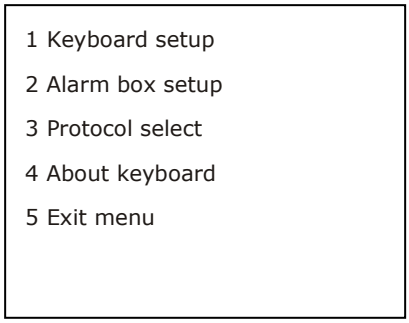
Press **[**ENTER**]** then complete the operation; LCD displays:



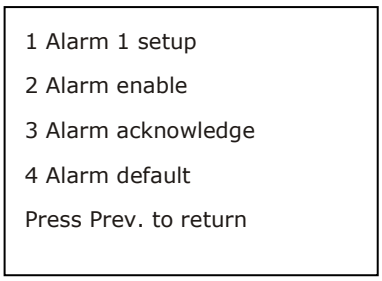
5.1 The alarm box control

The alarm input channel state setting and the alarm spot

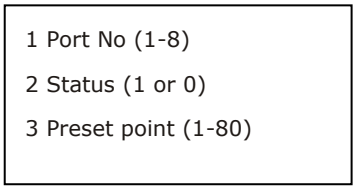
1. Enter the menu LCD displays screen below:



2. Press [2] to choose the alarm setting; LCD displays:



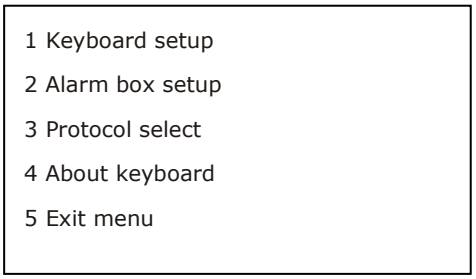
3. Press [1] to set the alarm input channel state and spot**;** LCD displays screen below:



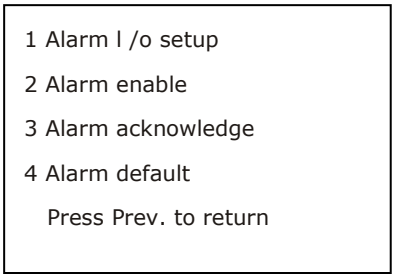
Input corresponding channel number (1-8). Press **[**ENTER**]**, when the cursor jumps to the second row, to input port status that must be set (1: ON; 0: OFF). Press **[**ENTER**]**, when the cursor jumps to the third row, to input the preset point that the alarm will turn to. Press **[**ENTER**]**, the screen will display the above prompt again, it requires to set other channels, user may press **[**PREV**]** to back the previous menu.

Set alarm ON/OFF status and alarm reset time

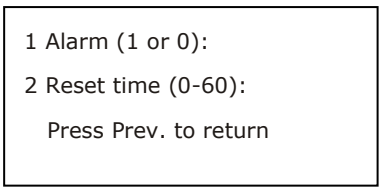
Enter into the menu, LCD displays



Press **[**2**]** to select alarm box setup; LCD displays:



Press **[**2**]** to select the alarm setting status and alarm reset time. LCD displays:



Keyboard parameter setting

Press **[**1**]** to open alarm function, press 0 to close alarm function, press **[**ENTER**]**, the cursor jumps to the second row, to input the reset time that need to modify, its numerical value switches from 0-60. If user selects 0 the alarm box will reset manually. Press **[**PREV**]** or move the joystick to left to return.

Manually reset alarm input

Enter into the menu LCD displays:

1 Keyboard setup
2 Alarm box setup
3 Protocol select
4 About keyboard
5 Exit menu

Press **[**2**]** to select the alarm box setup; LCD displays:

1 Alarm 1 setup
2 Alarm enable
3 Alarm acknowledge
4 Alarm default
Press Prev. to return

Press **[**3**]** to select manually reset alarm input channel LCD displays:

Input Port No (1-8)

Input the channel number (1-8) then press **[**Enter**]** to set.

Press **[**PREV**]** or move the joystick to left to return.

Resume the factory default setting

Enter the main menu – see above

Press **[**2**]** to select the alarm box setup; LCD displays:

Press **[**4**]** to resume the factory default state; LCD displays:

Success

And return automatically, carry out the function. The parameter of the alarm box will resume into the state before leaving the factory, will delete all settings. Please use the function carefully!

Notice: The keyboard must be installed in reasonably clean and interference – free environment for joystick to respond properly.

5.2 Protocol Setting

Enter the keyboard menu

Press **[1]** to enter the protocol setting LCD displays:

1 Matrix
2 Dome

Press **[1]** to enter the matrix mode LCD displays:

1 Dante matrix
2 Pelco matrix
press Prev. to return

Press ENTER and choose the protocol then return

Press **[2]** to enter the direct control mode; LCD displays:

1 Dante protocol
2 Pelco-P protocol
3 Pelco-D protocol
press Prev. to return

Press the numerical key to select the protocol, then return to the previous menu.

Keyboard message display

Enter the main menu Press **[4]** to check the keyboard message; LCD displays

Version: 1.30	The keyboard model
Protocol: Dante	The control protocol
Baud rate: 9600bps	The communication parameters
press Prev to return	

Press **[PREV]** or move the joystick to left to return.

The keyboard message menu will display the keyboard parameter settings, the keyboard model, the protocol and baud rate.

To Exit the keyboard menu, enter the menu,

Press **[5]** and exit the menu directly.

6.1 RS-485 Basic Information

Characteristic of RS-485 Bus

As specified by RS-485 standards, RS-485 bus consists of half-duplex data transmission cables with characteristic impedance as 120 Ohm. The maximum load capacity is 32 unit loads (including main controller and controlled equipment).

Transmission distance of RS-485 Bus

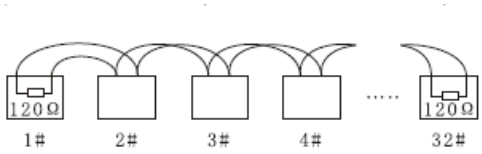
When user selects the 0.56mm (24AWG) twisted pair wires as data transmission cable, the maximum theoretical transmitting distances are as follows:

Baud Rate	Maximum Distance
2400BPS	1800m
4800BPS	1200m
9600BPS	800m
19200BPS	600m

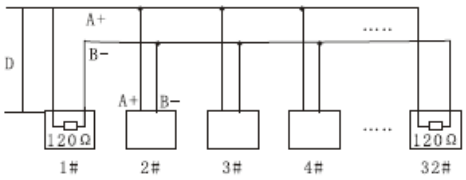
If user selects cables with incorrect gauge diameter, or installs the dome in an environment with strong electromagnetic interference, or connects lots of equipment to the RS-485 Bus, the maximum transmitting distance will be decreased. To increase distance, please use correct wire gauge and it is useful to install code distributors in order to maximize efficiency of transmission.

Connection and termination resistance

The RS-485 standards require a daisy-chain connection between the equipment. There must be termination resistance with 120 Ohm impedance at both ends of the connection (refer to picture 4-1.1).Please refer to picture 4-1.2 for simple connection. And "D" should not exceed 7m.



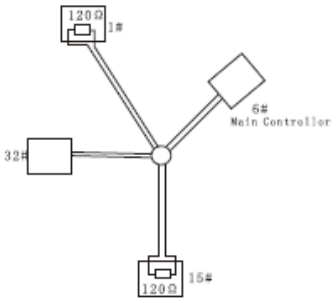
Picture 4-1.1

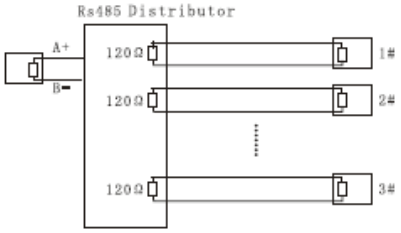


Picture 4-1.2

Problems in practical use

In some circumstances user adopts a star configuration in practical connection. The termination resistors must be connected to the two units that are furthest away from each other, such as equipment #1 and # 15 (refer to picture 4-1.3). As the star configuration is not in conformity with the requirements of RS-485 standards, problems such as signal reflections, lower anti-interference performance arises when the connecting cables are sizable. The reliability of control signals are decreased with the phenomena that the dome does not respond to or just responds at intervals to the controller, or does continuous operation without stopping. In such circumstances the factory will recommends the usage of RS-485 code distributor. The distributor can change the star configuration connection to the mode of connection stipulated in the RS-485 standards. The new connection achieves reliable data transmission (refer to picture 4-1.14)





6.2 Keyboard shortcut operation manual

Working Mode	Shortcut	Operation object	Function
Direct Control Mode and PELCO Matrix Mode	【N】 + 【Cam】	High speed dome	Input Dome ID, press【Cam】to select objectdome.
	【Tele】	High speed dome	Press【Tele】, increase themultiple of lens
	【Wide】	High speed dome	Press【Wide】, reduce themultiple of lens
	【Far】	High speed dome	Press【Far】, far focus
	【Near】	High speed dome	Press【Near】, near focus
	【Close】	High speed dome	Press【Close】, reduct theIris
	【Open】	High speed dome	Press【Open】, increase thIris
	【Set】+【N】+【Preset】	High speed dome	Adjust the imageto object position, press【Set】to input preset ID, then press【Preset】to set preset.
	【N】 + 【Preset】	High speed dome	Input preset ID, press【Preset】to call thepreset.
	【SET】+【1】+【Scan】	High speed dome	Adjust the imageto object position, press【Set】to input 1, then press【Scan】to set scanleft limit.
	【SET】+【2】+【Scan】	High speed dome	Adjust the imageto object position, press【Set】to input 2, then press【Scan】to set scanright limit.
	【1】+【Scan】	High speed dome	Input 1, press【Scan】to run scan.
	【Set】+【N】+【Pattern】	High speed dome	Press【Set】to input patternnumber, press【Pattern】to record pattern path.
	【Set】+【0】+【Pattern】	High speed dome	Press【Set】,input 0, thenpress【Pattern】to save pattern
	【N】 + 【Pattern】	High speed dome	Input pattern number(1-4), press【Pattern】to run pattern.
	【N】 + 【Tour】/【Tour】	High speed dome	Input tour number, press【Tour】 or directly press【Tour】 to run cruise.
	【9】+【5】 + 【Preset】	High speed dome	Input 95 to call main menu of dome
PELCO Matrix Mode	【Shift】+ 【Set】	Matrix	Press【Shift】and【Set】to call mailmenu of matrix
	【Prev】	Matrix	Switch to previous dome. Press【Prev】to jump theprevious dome, press【Prev】to hold itfor 2s，continuously switch the sixteen domesof connection matrixforwards.
	【Next】	Matrix	Switch to next dome. Press【Next】to jump thenext dome, press【Next】to hold itfor 2s，continuously switch the sixteen domes ofconnection matrix backwards.
	【Stop】	Matrix	Stop to switch.
	【Enter】	Matrix	After program, press【Enter】 to confirm.
	【N】 + 【MON】	Monitor	Input monitor ID, press【Cam】to select objectmonitor.